

**METHODS AND DEVICES FOR MEASURING A SURFACE PROFILE OF  
AN OPTICAL ELEMENT**

5

**Abstract of the Disclosure**

Methods are disclosed for measuring the surface profile of a "test surface" of  
an object such as an optical element, which can be a lens or reflective element  
(mirror). The "test surface" can have any of various profiles, including (but not  
limited to) spherical or aspherical. In a method embodiment, respective phase  
10 distributions of interference fringes, produced by interference of a reference light  
and light reflected from the test surface, and interference of the reference light and a  
respective light reflected from at a reference standard and/or a verification standard.  
A profile difference is computed from the respective phase distributions of  
interference fringes produced with respect to the test surface and the reference  
15 standard and/or verification standard. The profile difference is corrected, wherein  
the corrected profile difference is expressed as respective rotation-symmetry-error  
and rotation-asymmetry-error components, and the rotation-symmetry-error  
component is expressed as respective high-order and low-order components. The  
high-order component is computed by extraction from a difference between two  
20 difference phase distributions of interference fringes.